

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : James Craig, et al.  
Serial No.: 10/005,700  
Filed: December 5, 2001  
Title: METHOD AND SYSTEM FOR SECURELY RECORDING A  
VERBAL TRANSACTION  
Docket No.: 34223



LETTER

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

Enclosed is a certified copy of Canadian Patent Application No. 2,327,610; the  
priority of which has been claimed in the above-identified application.

Respectfully submitted,

PEARNE & GORDON LLP

John P. Murtaugh  
John P. Murtaugh, Reg. No. 34226

526 Superior Avenue East  
Suite 1200  
Cleveland, Ohio 44114-1484  
(216) 579-1700

Date: Mar 4, 2002

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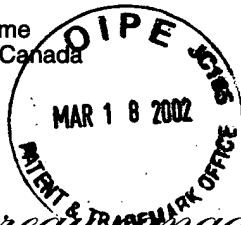


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Specification and Drawings, as originally filed, with Application for Patent Serial No:  
2,327,610, on December 5, 2000, by DIAPHONICS, INC., assignee of James Craig,  
Andrew Osburn, Carter Cockerill, Jeremy Bernard and Mark Boyle, for "Method and  
Apparatus for Uniquely Identifying an Electronic Transaction".


*S. Gregoire*  
Agent certificateur/Certifying Officer

January 8, 2002

(Date)

Canada

(CIPO 68)  
01-12-00

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### **Abstract**

A method and apparatus for uniquely identifying an electronic transaction between a seller providing an offer, the offer including terms and conditions and a buyer accepting the offer is disclosed. A voice security token is generated from digital audio files of the offer and of the acceptance and provided to the buyer and seller. A third party may be used to generate the voice security token in one embodiment.

## **Method and Apparatus for Uniquely Identifying an Electronic Transaction**

### **Field**

The invention relates generally to electronic commerce, and more particularly to a method and apparatus for uniquely identifying an electronic transaction.

### **5 Background**

There are many challenges in today's electronic environment for business exchange of goods and services. The traditional method for contracts to be made between the buyer and seller was for the buyer to provide a signature signifying that the buyer understood and agreed to the terms and conditions of the sale, usually within a sales contract. This signed contract was the  
10 basis for any dispute surrounding the sale – non-repudiation. This paper-based trail has been a challenge for electronic business because the contract and signature may all be electronically agreed to. There have been recent advances in the courts accepting digital signatures, but these have focussed on pen-based signatures utilizing biometrics.

Natural language speech recognition allows for more commerce to be completed using only  
15 voice and augments existing transaction systems. This can be voice transmitted over Publicly Switched Telephone Systems (PSTN), mobile or cellular traffic, two-way radio, campus systems and voice over Internet Protocol (Voice Over IP) – any medium that carries a voice stream. There are advances in speaker recognition that have taken place, but there is nothing that captures the nature and intent and agreement around the verbal contract that takes place  
20 in a voice transaction. In a voice transaction, there is no effective method to capture the transactional information for non-repudiation purposes and that is what the VST solves. This is critical if the 'offer' is not perceived to be the same as the 'acceptance' in the transaction.

Today, call centres either record the transaction or do nothing. If they do have the recording, they can use the tape to go back to play the original 'offer' and 'acceptance'. If the call was of a significant duration, the portions of the contractual terms and conditions and acceptance of the terms and conditions are captured using Computer Telephony Integration (CTI). These systems tend to be used in higher value transactions that are less frequent because of the cost to capture, store and more importantly, retrieve the correct information. The problem is that either party (buyer or seller) can challenge the authenticity of the files.

In an Electronic Data Interchange (EDI) transaction, the Value Added Network (VAN) assured the sender and receiver of the authenticity of the message and gave each tracking tools to ensure the messages had been received. VANs did not encrypt the information so there could be a challenge to the original seller's terms and conditions or to the acceptance by the buyer.

Virtual Private Network allow for the secure transaction of information with each party having a trusted medium. There is an implicit assumption that the buyer and seller are working in trusted environments but this does not solve the non-repudiation of the verbal contract.

The other challenge for businesses is to have an inexpensive process for reconciliation. If the process is paper-based, then the process is expensive because it is people intensive. Companies require an inexpensive system to easily verify the original verbal contract.

Therefore, there exists a need for a cost effective method and apparatus for uniquely identifying an electronic transaction that is not easily disputed by either the buyer or seller.

### Summary

A method and apparatus for the creation of a voice security token that uniquely identifies an electronic transaction is disclosed.

According to an embodiment of the invention, there is provided a method for uniquely identifying an electronic transaction between a seller providing an offer, the offer including terms and conditions and a buyer accepting the offer, the method comprising the steps of: saving the offer as a first digital audio file in a database; saving the acceptance as a second digital audio file in a database; generating a voice security token from the first and second digital audio files; and providing the voice security token to the buyer and seller, wherein the voice security token authenticates the electronic transaction between the buyer and the seller.

According to another embodiment of the invention, there is provided an apparatus for uniquely identifying an electronic transaction between a seller providing an offer, the offer including terms and conditions and a buyer accepting the offer, the apparatus comprising: means to save the offer as a first digital audio file in a database; means to save the acceptance as a second digital audio file in a database; a voice security token generator to generate a voice security token from the first and second digital audio files; and means to provide the voice security token to the buyer and seller, wherein the voice security token authenticates the electronic transaction between the buyer and the seller.

Other aspects and advantages of the invention, as well as the structure and operation of various embodiments of the invention, will become apparent to those ordinarily skilled in the art upon review of the following description of the invention in conjunction with the accompanying drawings.

## **Brief Description of the Drawings**

Embodiments of the invention will be described with reference to the accompanying drawings, wherein:

Figure 1 illustrates the overall architecture of an embodiment of the present invention;

Figure 2 illustrates a method of uniquely identifying an electronic transaction; and

Figure 3 illustrates an apparatus for uniquely identifying an electronic transaction.

Similar references are used in different figures to denote similar components.

### **Detailed Description**

5 In general, the disclosed method and apparatus presents an assurance mechanism for the buyer and seller in a verbal contract to verify the original terms and conditions, ensuring the authenticity of the information. A voice security token (VST) is a unique transactional identifier that is generated from the voice samples of the buyer(s) and seller(s) in a digital format. The VST is a condensed representation of the original voice files containing characteristic voice features of each the parties in the transaction. The VST is a unique identifier to the specific  
10 verbal agreement. The VST is a 'fingerprint' of the transaction and ensures no one can modify the offer and/or acceptance of the terms and conditions that were agreed to in a verbal contract. The disclosed method and apparatus also enables the buyer and/or seller to have their own systems to capture the information for their own assurance systems.

Referring to Figures 1, 2 and 3, a seller presents an offer including terms and conditions to a  
15 buyer. The buyer receives the offer and then accepts the offer, and an electronic transaction is agreed upon. The offer including the terms and conditions is saved as a first digital audio voice file and stored in a database. The acceptance of the offer is also saved as a second digital audio voice file and stored in a database. The format of the digital audio voice files are preferably in time format. A voice security token is then created from both the offer and  
20 acceptance as saved in the digital audio voice file database. The VST is created where the digital audio files are sent through a pre-processor program in addition to the core system that features frequency feature extraction. Since voiceprints are unique, the VST is unique for each electronic transaction.

The VST is then sent to both parties. The VST may be sent by mail receipt, email, fax, XML  
25 format, EDI format or any other user defined format. The VST forms the core of the non-

repudiation process and enables faster lookup of the original files. There can also be a smaller token that can points to the VST if either party only needs a condensed confirmation. The VST is now the basis of any non-repudiation claims if the buyer and seller disputes the terms and conditions that were agreed to.

- 5       The seller now goes through its normal process of delivering goods to the customer that were ordered through the contract.

10       In one embodiment, a third party is used as a neutral party that stores the information in the database in order for either party to have assurances as to the integrity and authenticity of the information. The third party dispute mechanism involves limited human involvement as either party only has to submit the VST to get access to the authentic originals. The system includes the ability to regenerate the VST from original digital audio files and compare it with the original buyer/seller VST. It will also highlight if there was any tampering with the original voice recordings of the contract, even though third party participation is used to reduce the likelihood of tampering of process by either buyer or seller

- 15       While the third party option for capturing the voice files from both parties as a non-repudiation system is a preferred embodiment, the seller and/or buyer can use the system for their own internal non-repudiation system.

In another embodiment, the system may also use middleware for integration into business documents.

- 20       The disclosed method and apparatus is used for confirmation of a verbal contract but can augment a traditional paper contract as well.

The VST integrates signal processing for analog-to-digital and Time-to-Frequency conversion, Frequency elements for the VST, Data storage and hosting, and encryption methods of securing the data. The VST interoperates with existing login and user level security systems.



The previously described embodiments of the present invention have many advantages including:

- the VST can be used by either the buyer or the seller or from a third party;
- the VST is used at the individual level versus the company level so that it creates an assurance mechanism based on biometrics to the individual(s) within the contractual agreements;
- the VST ensures the authenticity of the original 'offer' of the seller(s) and 'acceptance' by the buyer(s);
- the VST is a mechanism to ensure that the record of the 'offer' and 'acceptance' has not been tampered with as the VST is given to both parties and it must match to ensure the validity of the originals;
- the VST is different for every transaction ensuring a high degree of success to ensure that the VST cannot be duplicated without the original information;
- the VST system is much faster than traditional methods as it is based on database architecture speeds versus human intervention for non-repudiation challenges;
- the VST is much lower in cost than traditional methods due to limited human intervention;
- the VST is small in comparison to standard voice files and therefore can be embedded within business transactions; and
- the identity of the users within the transaction can be authenticated with the VST if the users have been through either an enrolment process in a proactive stance or matched 'after the fact' by comparing a given voice sample.

While the invention has been described according to what are presently considered to be the most practical and preferred embodiments, it must be understood that the invention is not limited to the disclosed embodiments. Those ordinarily skilled in the art will understand that various modifications and equivalent structures and functions may be made without departing  
5 from the spirit and scope of the invention as defined in the claims. Therefore, the invention as defined in the claims must be accorded the broadest possible interpretation so as to encompass all such modifications and equivalent structures and functions.

**What is claimed is:**

1. A method for uniquely identifying an electronic transaction between a seller providing an offer, the offer including terms and conditions and a buyer accepting the offer, the method comprising the steps of:

- 5           saving the offer as a first digital audio file in a database;
- saving the acceptance as a second digital audio file in a database;
- generating a voice security token from the first and second digital audio files; and
- providing the voice security token to the buyer and seller, wherein the voice security token authenticates the electronic transaction between the buyer and the seller.

10

2. An apparatus for uniquely identifying an electronic transaction between a seller providing an offer, the offer including terms and conditions and a buyer accepting the offer, the apparatus comprising:

- means to save the offer as a first digital audio file in a database;
- 15          means to save the acceptance as a second digital audio file in a database;
- a voice security token generator to generate a voice security token from the first and second digital audio files; and
- means to provide the voice security token to the buyer and seller, wherein the voice security token authenticates the electronic transaction between the buyer and the seller.

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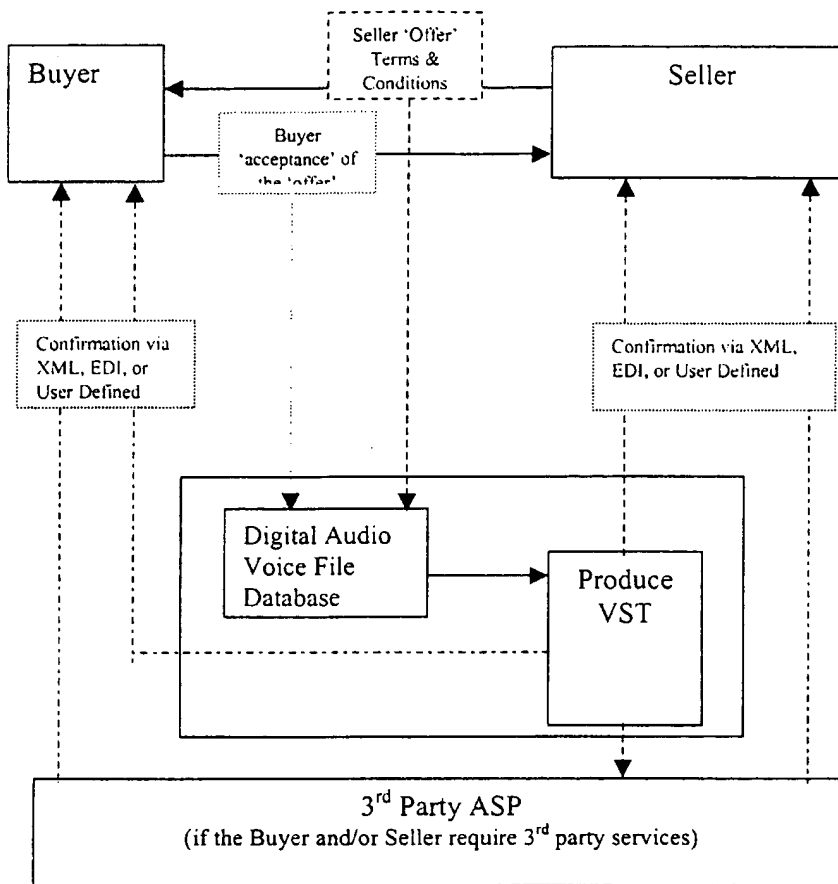
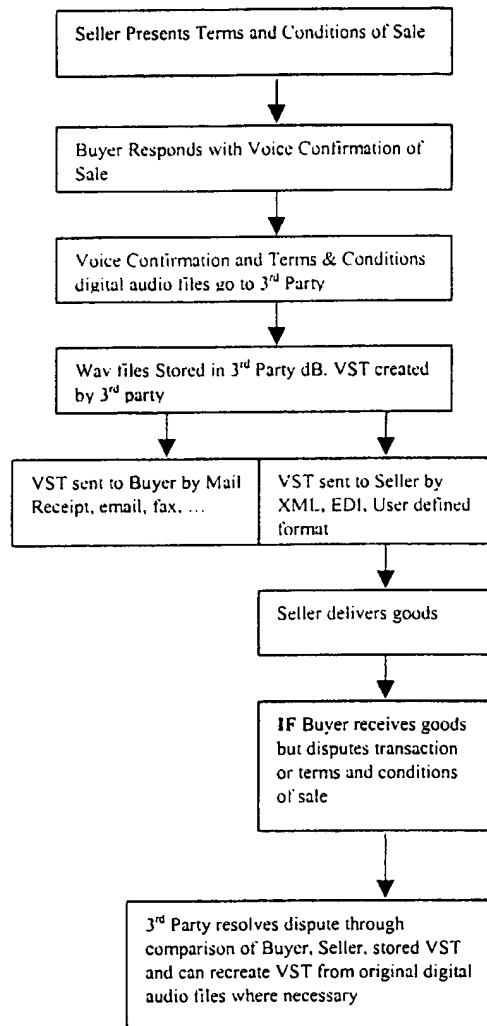


Figure 1

Figure 2



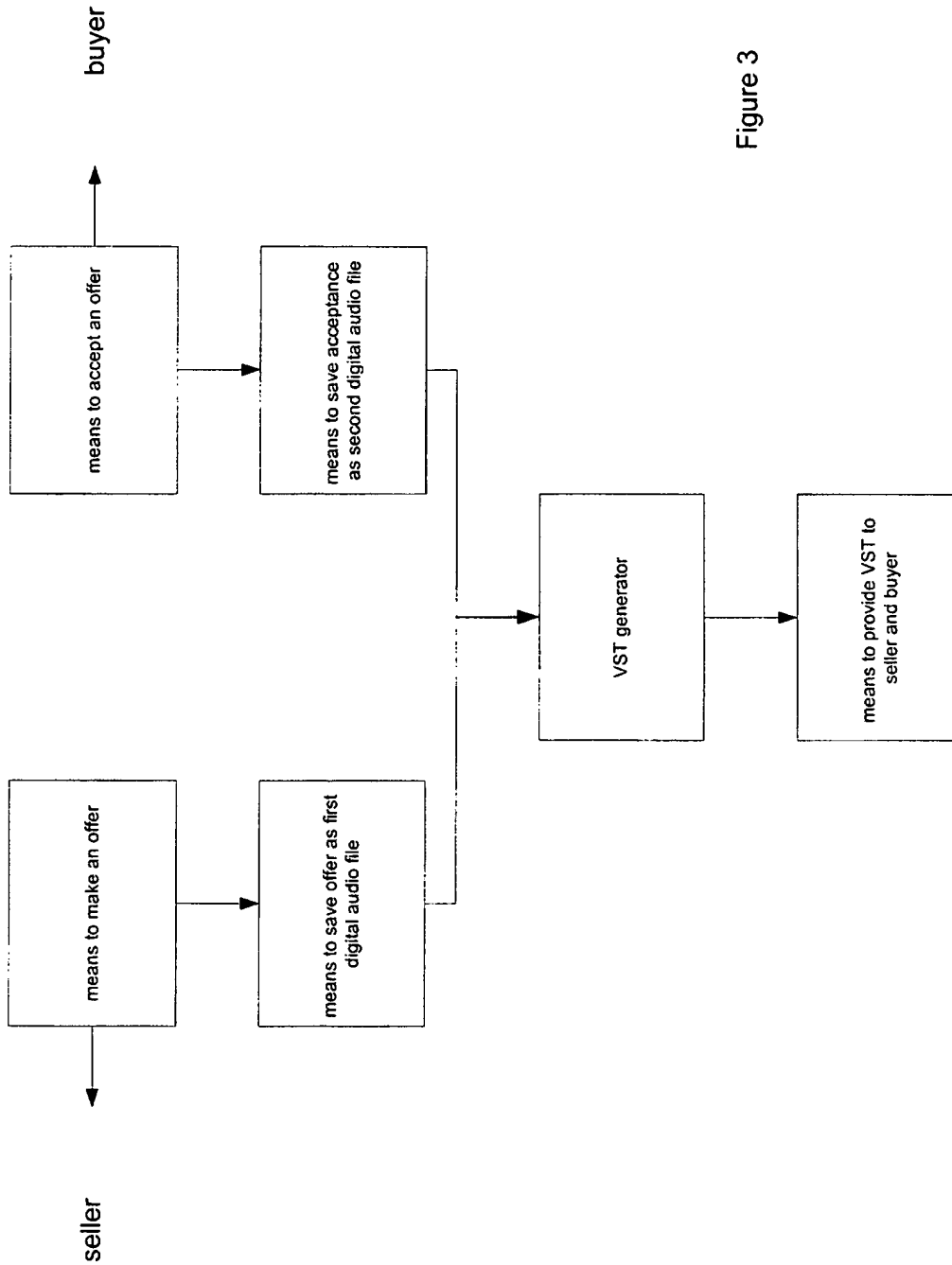


Figure 3